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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/705,829	11/13/2003	Christopher Eaddy	22549.00	7867

37833 7590 04/07/2005

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EXAMINER	
HON, SOW FUN	
ART UNIT	**PAPER NUMBER**
1772	

DATE MAILED: 04/07/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/705,829	EADDY ET AL.	
	Examiner	Art Unit	
	Sow-Fun Hon	1772	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☐ Responsive to communication(s) filed on _____.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-21* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-21* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date *11/13/03*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Claim Rejections - 35 USC § 112

1. The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

2. Claims 1-21 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. It is unclear in the specification exactly what is meant by a "large hysteresis characteristic in response to a temperature change". The adjective "large" is relative and subject to interpretation when data with comparisons and a baseline reference are not provided.

Claim Rejections - 35 USC § 102

3. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

4. Claims 1-2, 12 are rejected under 35 U.S.C. 102(b) as being anticipated by Klima, Jr. (US 5,997,964).

Regarding claims 1-2, Klima teaches a label comprising a message indicator, wherein the message "CAUTION HOT" (column 7, lines 20-35) is a warning message, which informs consumers of the temperature of the product relative to the comfort temperature range, and hence the product quality criteria. The indicator changes color at the transition temperature (the material becomes colorless) (column 7, lines 34-37). The message indicator comprises liquid

crystals that change color (column 2, lines 38-40) reversibly upon heating (cycled an indefinite number of times) (column 4, lines 50-60). The label is therefore an intelligent label, as defined by Applicant's specification (page 8).

Although Klima fails to disclose the hysteresis characteristic of the color change in response to a temperature change, it takes a threshold amount of heat, and therefore time, for the indicator material to change color. Thus the indicator material exhibits a relatively large hysteresis characteristic relative to an ideal instantaneously changing material.

Regarding claim 12, Klima teaches that the message indicator can also comprise crystal violet lactone which becomes colorless at the transition temperature (column 7, lines 34-37), and is therefore thermochromic/thermochromatic in response to a temperature change, and reversibly changes color upon heating (cycled an indefinite number of times) (column 4, lines 50-60). Although Klima fails to disclose the hysteresis characteristic of the color change in response to a temperature change, it takes a threshold amount of heat, and therefore time, for the indicator material to change color. Thus the indicator material exhibits a relatively large hysteresis characteristic relative to an ideal instantaneously changing material.

Claim Rejections - 35 USC § 103

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

6. Claims 3-11, 13-16 are rejected under 35 U.S.C. 103(a) as being unpatentable over Klima as applied to claims 1-2, 12; above, and further in view of Takahari et al. (US 4,601,588).

Klima has been discussed above.

Regarding claims 3-6, 13-16, Klima teaches an electron-supplying organic compound (Crystal Violet Lactone) and an electron-accepting compound (Bis-Phenol A) (column 7, lines 5-10), but fails to teach an ester compound for causing the hysteresis characteristic.

Takahari teaches a label (column 10, lines 5-10) for informing consumers of product quality criteria (denature of low-temperature preserved goods when once exposed to higher than the prescribed temperature) (column 1, lines 8-18), which comprises an ester compound is selected from the group consisting of branched alkyl esters (such as ethyl tridecylate), alkyl esters of aliphatic carboxylic acids (such as ethyl laureate) and glycerides, added as a waxy substance (column 6, lines 5-20). The waxy substance solidifies when the period of high temperature is short, thus preventing a change in color (discoloration) (column 4, lines 33-40), and hence providing a means to enhance the large hysteresis characteristic of the label.

Takahari teaches that the label further comprises an electron-supplying (donative) organic coloring compound (color precursor) selected from diaryl phthalides, polyaryl carbinols, leuco auramines, acyl auramines, aryl auramines, rhodamine B lactams, indolines, spiropyrans and fluorans (column 4, lines 65-70 and column 5, lines 1-5). Takahari teaches that the label further comprises an electron-accepting compound selected from the group of phenolic compounds (column 5, lines 22-35), aliphatic carboxylic acids (such as acetic acid), aromatic carboxylic acids (such as benzoic acid) (column 5, lines 47-50). Takahari teaches that the ester compound

is selected from the group consisting of branched alkyl esters (such as ethyl tridecylate), alkyl esters of aliphatic carboxylic acids (such as ethyl laureate) and glycerides (column 6, lines 5-20).

Therefore, because Takahara teaches that the ester solidifies when the period of high temperature is short, thus preventing a change in color (discoloration) (column 4, lines 33-40), and hence providing a means to enhance the large hysteresis characteristic of the label, it would have been obvious to one of ordinary skill in the art at the time the invention was made, to have used an ester taught by Takahari, in the message indicator of Klima, in order to obtain the desired amount of large hysteresis characteristic.

Regarding claim 7, Klima fails to teach that the liquid crystals irreversibly change color.

Takahari teaches a label which comprises thermochromic/thermochromatic material that irreversibly changes color (column 2, lines 10-20) in response to a temperature change. Takahari teaches that the label (column 10, lines 5-10) is for informing consumers of product quality criteria (denature of low-temperature preserved goods when once exposed to higher than the prescribed temperature) (column 1, lines 8-18). Hence the color change is irreversible in order to allow consumers to see that the product has denatured, or irreversibly changed in quality.

Therefore, because Takahara teaches that the irreversible color change allows consumers to see that the product has denatured, it would have been obvious to one of ordinary skill in the art at the time the invention was made, to have used liquid crystals that irreversibly change color as the liquid crystals in the message indicator of Klima, in order to obtain an intelligent label which is able to inform the consumer of the irreversible change in product quality.

Regarding claims 8-11, although Klima teaches an electron-supplying organic compound (Crystal Violet Lactone) and an electron-accepting compound (Bis-Phenol A) (column 7, lines 5-10), Klima fails to teach an ester compound for causing the large hysteresis characteristic.

Takahari teaches a label (column 10, lines 5-10) for informing consumers of product quality criteria (denature of low-temperature preserved goods when once exposed to higher than the prescribed temperature) (column 1, lines 8-18), which comprises an ester compound is selected from the group consisting of branched alkyl esters (such as ethyl tridecylate), alkyl esters of aliphatic carboxylic acids (such as ethyl laureate) and glycerides, added as a waxy substance (column 6, lines 5-20). The waxy substance solidifies when the period of high temperature is short, thus preventing a change in color (discoloration) (column 4, lines 33-40), and hence providing a means to enhance the large hysteresis characteristic of the label.

Takahari teaches that the thermochromic/thermochromatic material comprises an electron-supplying (donative) organic coloring compound (color precursor) selected from diaryl phthalides, polyaryl carbinols, leuco auramines, acyl auramines, aryl auramines, rhodamine B lactams, indolines, spiropyrans and fluorans (column 4, lines 65-70 and column 5, lines 1-5). Takahari teaches that the thermochromic/thermochromatic material further comprises an electron-accepting compound selected from the group of phenolic compounds (column 5, lines 22-35), aliphatic carboxylic acids (such as acetic acid), aromatic carboxylic acids (such as benzoic acid) (column 5, lines 47-50). Takahari teaches that the ester compound is selected from the group consisting of branched alkyl esters (such as ethyl tridecylate), alkyl esters of aliphatic carboxylic acids (such as ethyl laureate) and glycerides (column 6, lines 5-20).

Therefore, because Takahara teaches that the ester solidifies when the period of high temperature is short, thus preventing a change in color (discoloration) (column 4, lines 33-40), and hence providing a means to enhance the large hysteresis characteristic of the label, it would have been obvious to one of ordinary skill in the art at the time the invention was made, to have used an ester taught by Takahari, in the message indicator of Klima, in order to obtain the desired amount of large hysteresis characteristic.

7. Claims 1, 17-21 are rejected under 35 U.S.C. 103(a) as being unpatentable over Takahari et al. (US 4,601,588).

Regarding claim 1, Takahari teaches a label (column 10, lines 5-10) for informing consumers of product quality criteria (denature of low-temperature preserved goods when once exposed to higher than the prescribed temperature) (column 1, lines 8-18). The label comprises a composition that changes color (column 1, lines 25-30) and exhibits a large hysteresis characteristic in response to a temperature change (column 9, lines 35-45) relative to an ideal instantaneously changing material. The label is therefore an intelligent label, as defined by Applicant's specification (page 8).

Although Takahari fails to specify that the label comprises a message in print, because Takahari teaches that the label indicates whether or not a low-temperature product has been exposed to higher than the prescribed temperature (column 1, lines 25-30), it would have been obvious to one of ordinary skill in the art at the time the invention was made, to have provided a message in print on the label, in order to graphically illustrate the change in product quality.

Regarding claim 17, Takahari teaches that the label comprises thermochromic/thermochromatic material that irreversibly changes color (column 2, lines 10-20)

in response to a temperature change. Although Takahari fails to disclose the hysteresis characteristic of the color change in response to a temperature change, it takes a threshold amount of heat, and therefore time, for the indicator material to change color. Thus the indicator material exhibits a relatively large hysteresis characteristic relative to an ideal instantaneously changing material.

Regarding claims 18-21, Takahari teaches that the thermochromic/thermochromatic material comprises an electron-supplying (donative) organic coloring compound (color precursor) selected from diaryl phthalides, polyaryl carbinols, leuco auramines, acyl auramines, aryl auramines, rhodamine B lactams, indolines, spiropyrans and fluorans (column 4, lines 65-70 and column 5, lines 1-5). Takahari teaches that the electron-accepting compound is selected from the group of phenolic compounds (column 5, lines 22-35), aliphatic carboxylic acids (such as acetic acid), aromatic carboxylic acids (such as benzoic acid) (column 5, lines 47-50). Takahari teaches that the ester compound is selected from the group consisting of branched alkyl esters (such as ethyl tridecylate), alkyl esters of aliphatic carboxylic acids (such as ethyl laureate) and glycerides (column 6, lines 5-20).

Any inquiry concerning this communication should be directed to Sow-Fun Hon whose telephone number (571)272-1492. The examiner can normally be reached Monday to Friday from 10:00 AM to 6:00 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Harold Pyon, can be reached on (571)272-1498. The fax phone number for the organization where this application or proceeding is assigned is (703)872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

S. Hon

Sow-Fun Hon

04/01/05

HAROLD PYON
SUPERVISORY PATENT EXAMINER
1772

4/1/05